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SOCIO-ECONOMIC ANALYSIS OF SANITATION WORKERS IN MUNICIPAL SOLID WASTE COLLECTION IN ADDIS ABABA, ETHIOPIA

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ABSTRACT This study investigates the perceptions and lived experiences of sanitation workers in relation to solid waste and their service in waste management. The socio-economic status of these workers is the core of the analysis. The data were collected from sanitation workers and other relevant stakeholders in a *wereda* (district) of the Bole sub-city in Addis Ababa, Ethiopia. Fieldwork was conducted over the course of nine months, from August to September 2017, from February to March 2018, and from June to October 2018. Semi-structured interviews, focus group discussions and direct observations were used with a total of 48 respondents, including sanitation workers who work for a solid waste collection shared enterprise in the area. Sanitation workers perceive the mixed solid waste they collect as having great economic value, regardless of its recyclability. Their work benefits themselves and many others in socially, economically and environmentally sustainable ways, and it contributes to the circular economy. However, for these workers, the interlinked social and occupational challenges rooted in the community and institutions are a source of struggle. This affects their self-esteem, dignity, their rights in a practical sense, and the waste collection service in the area.

Key Words: Sanitation workers; Lived experiences; Solid waste; Shared enterprise; Socio-economic.

INTRODUCTION

The current form of municipal solid waste management (MSWM) is linked with the cholera epidemics of the 1830s that impacted Europe and North America. As a result, the collection of municipal solid waste (MSW), the composting of organic waste, and the improvement of sanitation for the sake of public health became public functions (UNEP, 2015). In many localities, MSWM is conducted by municipalities or local governments as a public service, supported by the public budget. In others, this service is provided by the private sector, on the basis of contractual agreement with the local government. In many African countries, the informal sector and community-based organizations (CBOs) have an immense role to play in waste collection and disposal (UNEP, 2018).

The definition of MSW varies from country to country, so it is essential to determine the exact definition of the specific terms used in different contexts. This variation in definition makes comparing and estimating numerical values in MSW generation and interpretation a challenge between countries (UN-Habitat, 2010; Kawai & Tasaki, 2016). Indeed, in most countries, MSW is generally understood as household waste, although some household hazardous waste is

included in MSW streams. Household hazardous waste includes motor oil, batteries, and e-waste. Over and above the household waste, the responsible municipality specifies what are the types and sources of waste considered MSW. This categorization may be influenced by economic, social, political, and historical factors (Kawai & Tasaki, 2016).

Most African countries lack a comprehensive and holistic definition of the types of waste considered hazardous to human and environmental health (UNEP, 2015; 2018). In Ethiopia, MSW is not clearly defined in proclamations, regulations, or other documents. The environmental pollution control proclamation of Ethiopia discusses the proper management of MSW without defining what types of waste are to be regarded as MSW (Federal Negarit Gazeta, 2002). Likewise, Addis Ababa City Government (2007) does not mention MSW or its management, although it is a major source of environmental pollution.

In fact, there is no single definition of solid waste or MSW that is accepted by all relevant actors, so this paper adopted the definition given by the Federal Negarit Gazeta (2007: 3525): "anything that is neither liquid nor gas and is discarded as unwanted." This definition does not specify types of solid waste and over-generalizes the broader categories. However, the operational definition of solid waste allows a conceptual understanding of the context in which local sanitation workers operate. Of course, it must not be forgotten that the details of any definition of waste and/or solid waste reflect the culture, education, exposure, socio-economic status, and other factors. As Douglas (1984) pointed out, every culture has structural notions by which dirt and its opposite are categorized. In each culture, some things are valued over others, and such understandings generally vary by individual as well as community (Kopytoff, 1986).

MUNICIPAL SOLID WASTE COLLECTION SERVICES IN ADDIS ABABA

Waste management is an essential service in urban environment in the 21st century. Managing it properly and affordably is a key challenge and responsibility for city governments. Such services are a basic human need in the contemporary world and is even regarded as a basic human right. In this globalizing world, it is a cross-cutting issue that touches upon several aspects of society and the economy. Thus, it has a strong correlation to various global challenges, including health, food, resource security, poverty reduction, sustainable production and consumption, and climate change (UN-Habitat, 2010; UNEP, 2015).

Developing countries struggle to cover the current waste collection costs, such as expanding service coverage and reducing uncontrolled disposal (UNEP, 2015). Even though the amount of waste produced in Africa is relatively small, only 55% of the total waste collected is well managed. In many developing countries, the waste collection service alone consumes a considerable amount of the budget from the local government. Moreover, the service is not proportionally covered with disparities between and within the central part of the city and suburbs. The waste collection services are mainly provided by the public and private sectors, such as municipalities or private contractors. In spite of that, the contribution of

the informal sector and CBOs in the waste collection is immense in many African countries (UN-Habitat, 2018).

In Ethiopia, the government formulated its National Micro and Small Enterprise (MSEs) Development Policy and Strategy in 2005 and established the Federal Micro and Small Enterprise Development Agency in the following year. According to the revised 2016 MSEs development policy and strategy of the country, it aimed at contributing to the country's agenda of addressing the employment problem and bring about pro-poor development in line with other development agendas of the country (Ministry of Urban Development and Housing, 2016). The involvement of government-supported cooperatives-MSEs in solid waste collection service in the case of Addis Ababa started just ahead of the national election of 2005. It has been over a decade since sanitation workers have been the main actors in providing house-to-house solid waste collection services in the city. This is linked to public demand for better waste collection services and make the service widely accessible (Bjerkli, 2013; Tilaye & van Dijk, 2014; UN-Habitat, 2017).

Addis Ababa uses two types of collection systems: primary and secondary collections. The establishment and supervision of primary collection are conducted under local *wereda* administrations. For this task, the budget is allocated by the city administration to each of the 10 sub-cities of Addis Ababa for operational costs including maintenance and staff salaries. The main actors in the primary collection are sanitation workers, who work through contractual agreements with a given *wereda* administration. Their main role is providing door-to-door waste collection for households and some non-residential locations in the *wereda*. They are also responsible for transporting waste to transfer points or skip points selected by the *wereda* for secondary collection. These transfer points are located inside each *wereda* and are purposefully selected based on their accessibility to the main road. Then, the secondary removal to the final dumping site of Reppi is performed by each sub-city, using container trucks, closed trucks, and compactors. Here, sanitation workers load the collected waste into municipal containers and compactor trucks to be taken to the Reppi dumping site. After the involvement of sanitation workers, collection coverage has increased progressively from 53.9% in 2004, to 78% in 2005 and recently in 2018, 85% was properly collected and transported to Reppi dumping site. Out of 3,000 tons of estimated daily waste generated in the city, only 5% was recycled and the remaining 10% ended up being dumped in undesignated areas such as sewers, ditches, public spaces, etc. (Tilaye & van Dijk, 2014; JICA, 2018).

RESEARCH AREA AND METHODOLOGY

Addis Ababa is the capital city of Ethiopia and the seat of the African Union and Economic Commission for Africa. It is located in the central part of the country, at an average altitude of 2,400 meters above sea level, making it the highest-altitude capital on the continent. The city was founded in 1886, during the reign of Emperor Menelik II and Empress Taitu. The city developed without

formal planning, although Empress Taitu did develop an informal master plan, called the Taitu master plan, which was followed until the Italian occupation in 1935. The modern form of the administration of the city was established in 1909 (UN-Habitat, 2008; 2017).

The current governmental structure of Ethiopia is a three-tiered system, with federal, regional, and local governance. There are nine autonomous regional states in the country and two city administrations, namely Addis Ababa and Dire Dawa. Each state is subdivided into zones and then further into *weredas*. The structure of the city administration of Addis Ababa is hierarchical, with the general city administration, sub-city administrations, and *wereda*. In this decentralized governance system, local governments have responsibility for rendering basic services, service users pay for it. This is done on the cost recovery principle of public finance, and local governments are responsible for revenue collection. The federal government subsidizes gaps between the amounts collected and the actual costs incurred (UN-Habitat, 2017).

Addis Ababa comprises of 10 sub-cities, and each of the sub-cities is further divided into *weredas*. There are 116 *weredas* in the city administration. Each sub-city has a different number of *weredas*. Bole sub-city is located in the eastern part of the city and has 15 *weredas*, and its *wereda* X was selected for this study (see Fig. 1). This research investigates the socio-economic aspects of MSWM in the study area, particularly focusing on the perceptions of sanitation workers and

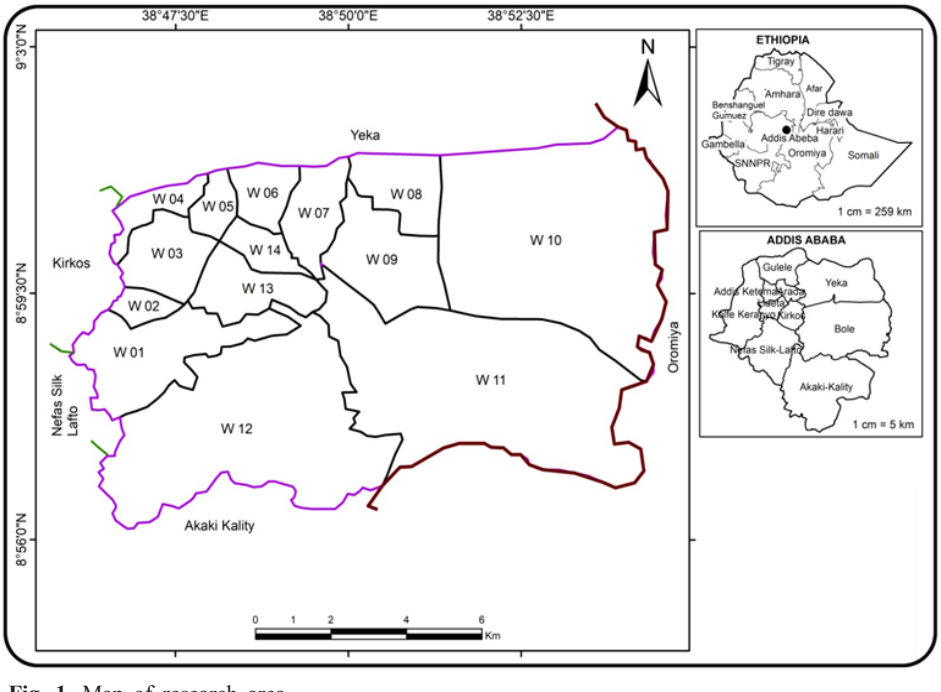

Fig. 1. Map of research area.
Modified the map image in Addis Ababa City Administration Office document 2005 by author.

their lived experience in relation to their service in waste management. The Oxford Learner's Dictionaries (n.d.) defines a sanitation worker as "a person whose job is to remove waste from outside houses, etc." The data in this article were collected using a qualitative approach, and mainly uses interviews, two focus group discussions with male and female participants separately, and observations during three fieldwork sessions that lasted for a total of nine months in 2017 and 2018. The author began conducting fieldwork in *wereda* X from August to September 2017 (this is the rainy season in Ethiopia) with members of one of the three sanitation workers unions in the area. The subsequent periods of fieldwork were from February to March 2018 and from June to October 2018. The primary data were collected from a total of 48 respondents. These were sanitation workers (19) (see Table 1), residents (15), itinerant junk buyers (7), wholesalers of recyclables (2), and key informants (5) employed by NGOs, the *wereda*, and the Addis Ababa cleaning management agency. During the duration of the fieldwork, follow-up interviews were conducted with sanitation workers to understand how their socio-economic status changed over time. To support the primary data collected, supplementary data were collected from Addis Ababa cleaning management agency, *wereda* administration offices, the Central Statistics Authority, and others.

Table 1. The socio demographic profile of sanitation workers'.

No.	Code	Sex	Age	Educational Status	Marital Status	Number of children	Previous occupation	Year of service at the time of September 2017
1	AA	M	28	Grade 10+1	Married	1	*Kebele* manager	1.5 years
2	AM	M	36	No formal education	Married	1	Daily laborer	2 months
3	AT	M	25	Grade 5	Married	1	Daily laborer	2.5 years
4	AW	M	28	No formal education	Married	0	Daily laborer	3 months
5	AY	F	25	Grade 5	Married	0	Daily laborer	2 years
6	DD	F	31	No formal education	Divorced	1	Daily laborer	4 years
7	DS	F	35	Grade 6	Married	2	House wife	8 years
8	EA	F	50	No formal education	Married	6	Daily laborer	8 years
9	ES	F	50	No formal education	Married	3	Daily laborer	8 years
10	GG	F	40	-	Married	-	-	-
11	HD	F	26	Grade 5	Married	0	Daily laborer	1 year
12	HH	F	40	Grade 5	Married	2	House wife	10 years
13	MA	M	26	Grade 8	Married	0	Daily laborer	2 years
14	MK	M	21	-	Married	-	-	-
15	MM	F	34	-	Married	-	-	-
16	MS	F	35	No formal education	Divorced	3	Daily laborer	10 years
17	TT	F	35	Grade 3	Married	1	House wife	7 years
18	ZE	M	30	Grade 3	Single	0	Daily laborer	9 months
19	ZM	M	29	Grade 8	Single	0	Business	5 years

SANITATION WORKERS' PERCEPTIONS OF SOLID WASTE AND THEIR SOCIO-ECONOMIC STATUS

Any occupation can be understood and evaluated longitudinally, using emic and etic perspectives. Sanitation workers' perceptions of solid waste reflect multiple aspects of their lives, given the significance of their services as a livelihood option. Their perceptions are often associated with their earnings and their socio-economic impact. The economic merits of waste collection are most often reflected in their definition of waste. They frequently refer to waste and money together as they describe waste and waste collection. Their expressions highlight key concepts of the exchange value of waste in a contextualized manner. Waste as a resource motivates them in their work as they seek more opportunities to maximize their incomes from the collection service for betterment of their lives.

> Sanitation worker GG: "One bag of plastic waste may fetch 10 ETB. If I collect it I get that 10 ETB, but if I do not, I will not. The educated people get money according to their educational status, right? We get money according to the waste we collect." (August 2018)

> Sanitation worker DD: "… Waste is a resource that supports our lives. It helped me to nurture and educate my daughter including in a private school, though now she is in a government school because of escalated cost. Before joining the sanitation workforce, I couldn't afford to enroll my daughter into school. I was able to pay and enroll her after joining this workforce though by then relatively she was a grown-up girl compared to her classmates. Educating her is absolutely a positive change for me ..." (August 2018)

The monthly income these workers collect permits them and their families to improve their lives in a way that is otherwise not possible. This includes being able to pay for basic needs and improvements in their quality of life, including renovating and furnishing their homes, buying good clothes, sending their children to private schools, and so on. Sanitation workers monthly incomes are calculated on the basis of the amount of waste they collect, and this may also be reflected in their perceptions. In 2009, the municipality contracted this public service to sanitation workers through MSEs and paid them based on volume (see Fig. 2), at the rate of 30 ETB/m^3. They are currently being paid 90 ETB/m^3 (Bjerkli, 2013; Tilaye & van Dijk, 2014). Their monthly incomes have almost doubled, going from earning 2,733 ETB in 2016 to 5,393 ETB in 2017. Tilaye & van Dijk (2014) found that sanitation workers are engaged in a waste sales to the agency, and this is considered to support enhancements to collection services. In fact, it is also important to understand the positive changes that have occurred by comparing their livelihoods before and after they joined the sanitation workforce. These changes are personalized and integrated into sanitation workers' socio-economic status, the economic development of the group, and capabilities that were previously out of reach. Waste transportation is also improving, and recently the group was able to purchase a private collection truck (see Fig. 3). Additionally,

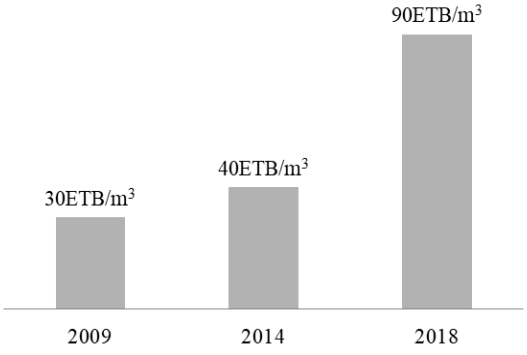

Fig. 2. The income growth of sanitation workers per m^3 of waste. Source: Bjerkli (2013); Mora et al. (2014).

Fig. 3. Collection truck owned by sanitation workers in the study area.

the workers are engaged in market-oriented segregation and business that adds to their incomes. Sanitation workers consider their work as a way to escape economic distress and as a bridge to a better future.

> Sanitation worker EA: "… I used to carry waste in my back for 2 years and 6 months to get 160 ETB and then 200 ETB; then, we received pushing cart (see Fig. 4) for collection. now we get up to 2,000 ETB or 3,000 ETB per month and we managed to buy our own car. Thanks to God ..." (August, 2018)

Fig. 4. Unloading solid waste at a transfer station in the study area.

Additionally, market-driven segregation allowed them to generate income at different levels in waste management. It was observed during fieldwork that valuable items from mixed waste also come along with other waste as referred by sanitation workers as *kolikole* (recyclable waste). The segregation process of the recyclable waste is conducted at transfer sites to be sold as a top-up for their monthly income. This is the transitional phase of *kolikole* as it becomes a commodity and is returned back to the circular economy. Anything that can be purchased for money can be considered a commodity, regardless of its afterlife and how it might return to decommodification (Kopytoff, 1986). This business networks them to both the informal and formal recycling sectors, including *Diza Bet* (wholesalers) (see Fig. 5) and *koralio*s (itinerant junk buyers). The economic activity is important to sanitation workers as well as others in the resource recovery system. The name *kolkole* includes extensive list of valuable waste/materials this mainly include those that has monetary value in the system of recycling which is dependent on the market demand. These items are plastic jerry-can, different types and sizes of cans, pet bottle, certain types of bottles, metal scrap etc. It is also important to mention the selection criteria which implies the existing recycling sectors and the demand to reuse certain items. For example certain very similar types of items might not be welcomed such as bottles. A well known local wine bottle, Acacia wine bottle doesn't have exchange value at the time of fieldwork as observed at two of the *Diza Bets* in the research area. On the other hand, several local wine bottles have value and sold at 7 ETB per bottle.

Sanitation workers believe that they have well established relationship with *Diza Bet*. They agree that *Diza Bet* and itinerant junk buyers are contributing for the segregation of waste and facilitating the marketing chain of valuable waste in addition to contributing to their income. One of the respondent put this scenario in such a way.

Fig. 5. A *Diza Bet* in the research area.

> Sanitation worker GG: "It is a mutually benefiting business. If we don't sell it to them from where do they get *kolikole* and from our side if we don't segregate it we will not get additional income and as the same time it will harm the environment. I think they are supporters for our service and additionally they are accessible in the area … If they don't buy the waste what do we do with it. If we could take the waste to *Markato* (the biggest open market in the country as well as in Africa), it is additional transport expense. They are available in the surrounding so it is benefiting us." (August, 2018)

> *Diza Bet* owner TM: The owner of a *Diza Bet* near to one of the transfer station in the area acknowledges their good relationship with sanitation workers and indicate it in this way, "We know how they segregate the materials, thus we try to give them special offer. We give them better price especially for them. We have good relationship." (August, 2018)

Sanitation workers continue to face challenges, in spite of the economic and employment opportunities in their sector. Their dignity and the socially degrading treatment they face in their communities are serious concerns. Sometimes the power exhibiting forms change from verbal into a physical form and turn into abusive relations in certain cases. The level of awareness of the community on proper solid waste handling is very limited and habitual segregation is entirely in its infancy stage. This situation perpetuates occupational health hazards. Generally, sanitation workers are voiceless in the system to decide in matters that have direct implications towards their service which aggravates the existing situation.

> In relation to this, sanitation worker DS: "… some people insult us while we walk in the neighborhood and we respond by saying leave us alone, who knows we may lead a decent life in the future …" (August, 2018)
>
> Another respondent, ZM, said, "… They consider us as waste ourselves. When we walk in residential areas, they say that we are trash/garbage … the community looks down on us … I think it is better to collect waste than to steal someone's property to survive …" (September, 2017)

Sanitation workers' employment contributes immensely to filling the country's huge gaps in urban unemployment and solid waste management. Their adaptive strategies and value systems regarding mixed waste benefits themselves and many others in socially, economically, and environmentally sustainable ways, contributing to the circular economy. However, the interlinked social and occupational challenges from the community and institutions are a source of frustration.

BEYOND UNCOLLECTED WASTE

Wereda X is one of the areas where the poor and the rich segments of the society reside harmoniously in a semi-segregated form of settlement. There are eight concrete solid waste plates constructed for containers in the area. Additionally, there are three transfer sites for secondary collection, which are located on bare ground with no protective mechanism to prevent soil pollution. These plates were built to prevent pollution and facilitate waste collection in a hygienic manner. However, none of these is used for its intended purpose, and some have been converted for other functions, including for residences by needy individuals, temporary shelter, stores, and other uses. In 2018, the author observed that all 13 of the containers in the *wereda* are placed on the ground and have no protective mechanism. When collection is delayed, these containers and transfer stations severely pollute the surrounding areas as biodegradable waste begins to compost. The consequences of this are evident in most transfer sites, as both scattered and collected waste continue to decay, producing a foul smell. Some of the sanitation workers who reside far from the transfer stations have difficulty coming late in the evening to load compactor trucks. Hence, the sanitation workers have converted four of the solid waste plates into a temporary shelter to protect themselves and the equipment from thieves and harsh weather. The need for this station for sanitation workers was being under discussion at the city level. It was planned to give them a 500 m^2 land area for each shared enterprise in each *wereda* to store recyclable waste, provide shower facilities for themselves, parking of their collection truck, and other features. The decision was ultimately not implemented due to bureaucratic obstacles.

Residents complain that the collection service providers do not come twice a week, as is contracted for (Bjerkli, 2013) and this compliant was also noticed at the time of the fieldwork (see Fig. 6). Additionally, the collected waste that is kept for prolonged periods as the result of delayed secondary collection from

Fig. 6. Sanitation worker cleaning a pedestrian in the research area.

transfer sites leads to conflict with community members and supervisors. This has resulted in a not in my backyard (NIMBY) movement by residents living near the transfer sites. This scenario will be best illustrated by one of the cases of NIMBY movement to understand the extent of the problem. On August 13, 2018, the local community in the neighborhood at one of the transfer sites prohibited residents and sanitation workers to dump waste in the designated site and collection container. This conflict began after waste remained in the area for about 14 days and began to pollute the environment. The conflict extended to physical and verbal abuse to the sanitation workers. Community members organized and communicated with the *wereda* administration to permanently prohibit the use of the site, and they were successful. However, sanitation workers were not consulted as important stakeholders, but they were even considered to be the cause of the problem. Being this the fact, during the fieldwork of different instances, the author observed the challenges and positive sides of the sanitation workers relationship with the community. There are people in the area who try to support sanitation workers by giving in kind support such food, cloth, shoes, etc. Sanitation workers who participated in this research share the idea that it is difficult to generalize their relationships with stakeholders by saying it entirely hostile with some and good with others, despite there are many issues that needs serious considerations for improvement.

The other impact of the delayed secondary collection is associated with sanitation workers' income. As documented by Baudouin et al. (2010), sub-cities are not capable of offering sufficient numbers of collection trucks, which negatively affects the regularity of house-to-house collection. In fact, sanitation workers are not paid unless the collected waste is transferred to the final dumping site, and this is reflected in their monthly incomes (Bjerkli, 2013). This condition was prevalent

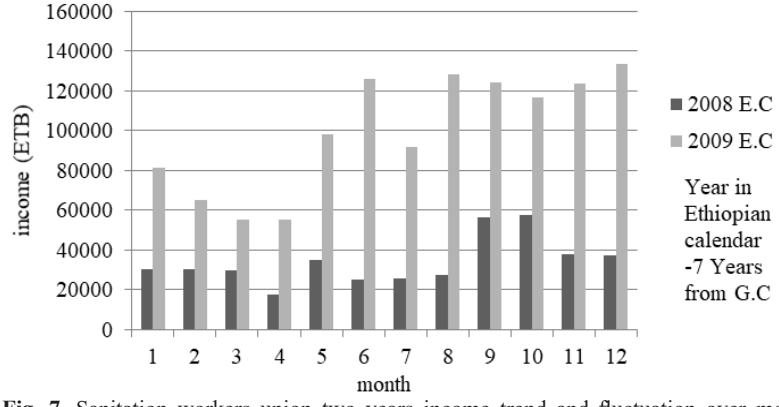

Fig. 7. Sanitation workers union two years income trend and fluctuation over months in a year in the study area.
Source: *Wereda* X micro and small enterprise office.

at the time of fieldwork, and it was often attributed as the main cause for fluctuations in monthly income (see Fig. 7), which were frustrating at times. The author was able to attend a series of meetings held in February, 2018 with officials from waste-collection agencies and representatives from all sub-cities, *weredas*, shared enterprises, recyclers, and other stakeholders.

As reflected by many of the participants at the meeting a representative quote is as follows:

> "We are working under a contractual agreement. We are not government employees. When we are sick there is no free health service, and if we don't work, we get no payment. When Reppi is closed for a few days, the collected waste stays to decay, and this affects our health and income. We load this waste ourselves. There is no one who pays us for those idle days as the result of the delayed secondary collection. A doctor gives treatment to only sick individuals, but we work for all Ethiopians, no matter what. However, nobody cares for us." (February, 2018)

Sanitation workers often refer to their deep-rooted frustrations and complaints related to the services they render and the unfulfilled promises including the shared space. Promises were given that most issues mentioned at this meeting on the collection, capacity, efficiency, lack of community awareness, and so on would be given attention and will be resolved by the agency in collaboration with others.

CONCLUSION

Developing countries including Ethiopia, are struggling to provide essential services such as MSWM and address related issues of waste collection costs, expanding service coverage, and reducing uncontrolled disposal, to name a few.

In 2005, to address these problems, the Ethiopian government formulated its National MSEs Development Policy and Strategy and established the Federal Micro and Small Enterprise Development Agency. This has led to the involvement of sanitation workers in solid waste collection services in Addis Ababa which significantly increase the collection up to 85% in recent years. In this article the socio-economic analysis of sanitation workers' lived experiences is given much attention since this aspect of the MSWM is not given emphasis in the area. In approaching to understand sanitation workers perception from emic perspectives a group of participants from a *wereda* in Bole sub-city were targeted for a total of nine months in 2017 and 2018. Sanitation workers' perceptions of solid waste reflect multiple aspects of their lives, given the significance of their services as a livelihood option. Their perceptions are often associated with their earnings and the socio-economic impact it has on their lives. They also perceive the mixed solid waste they collect as having great economic value, regardless of its recyclability. Their expressions highlight key concepts of the exchange value of waste in a contextualized manner.

In recent years, the MSWM of Addis Ababa is under constant changes. The primary collection system by sanitation workers is also progressively improving and currently the service is rendered with the support of animal cart and truck which is a huge change over time. This is a prominent transition in the waste collection history of the city. On the other hand, the lives of sanitation workers are also improving time to time as their monthly income has increased from getting 30 ETB/m^3 in 2009 to 90 ETB/m^3 in 2018. In order to get additional income, market-driven segregation of recyclable waste from mixed waste is habitually conducted at transfer sites. This practice allowed them to generate income as a top-up for their monthly income and mostly the income for this source is used for miscellaneous costs such as fuel for the shared enterprise. Their perceptions and adaptive strategies of mixed waste benefit themselves and many others in socially, economically, and environmentally sustainable ways, contributing to the circular economy.

The challenges indicated by sanitation workers include the socio-economic, domino effect of secondary collection and institutional issues, such as improper waste handling, delayed waste collection, public and environmental hazards, dignity, and violations of rights. The sanitation workers service and income are being victimized by the problems associated with secondary collection service which they don't have control over. Sanitation workers perception imply that they are not engaged in the decision making processes which have direct impact on their service delivery. They perceive that they are voiceless in the system and most decisions are made top down. Moreover, these scenarios are affecting their self-esteem and the overall waste collection services provided in the area.

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